CLAIMS

What is claimed is:

1. A compound of Formula (I), or a pharmaceutically acceptable salt thereof, wherein the compound of Formula (I) is:

$$R^1$$
 T_3
 R^2
 (I)

wherein:

5

10

15

20

 R^{1} is K' or $-(C(R_{o})(R_{f}))_{aa}-T_{3}-A$;

R² is K, K' or

$$(C(R_o)(R_f))_{aa}$$

$$(C(R_o)(R_f))_{aa}$$

$$(C(R_o)(R_f))_{aa}$$

$$(C(R_o)(R_f))_{aa}$$

A is a hydrogen, K, K',

R_b is a hydrogen, a lower alkyl group or -COCH₃;

Re is a hydrogen or a lower alkyl group;

D.is a hydrogen, V₃, K or K';

Z is an oxo, an oxime, a hydrozone, \approx N-O-A, -N-(OA)-R₈₂, \approx N-N-(A)(R₈₂) or \approx N-(R₈₂);

5

10

15

20

R₈₂ is a hydrogen, K, K', an alkyl group, an aryl group, an alkylsulfonyl group, an arylsulfonyl group, a carboxylic ester, an alkylcarbonyl group, an arylcarbonyl group, a carboxamido group, an alkoxyalkyl group or an alkoxyaryl group;

 $(C(R_e)(R_f))_z - (U_3)_{bb} - V_3;$

K' is $-W_a - E_b - (C(R_e)(R_f))_{p1} - E_c - (C(R_e)(R_f))_x - W_d - (C(R_e)(R_f))_y - W_i - E_i - W_g -$ $(C(R_e)(R_f))_z$ - R_e ;

$$V_3$$
 is $-NO$, $-NO_2$ or

U₃ is an oxygen, sulfur or -N(R_a)R_i;

. a, b, c, d, g, i and j are each independently an integer from 0 to 3; aa is an integer from 0 to 5;

bb is an integer 0 or 1;

p.1, x, y and z are each independently an integer from 0 to 10;

W at each occurrence is independently -C(O)-, -C(S)-, -T₃-, -(C(R_e)(R_f))_h-, an alkyl group, an aryl group, a heterocyclic ring, an arylheterocyclic ring, -(CH₂CH₂O)_{q1}- or a heterocyclic nitric oxide donor;

E at each occurrence is independently -T₃-, an alkyl group, an aryl group, -(C(R_e)(R_f))_h-, a heterocyclic ring, an arylheterocyclic ring, -(CH₂CH₂O)_{q1}- or Y₃;

Y.3. is:

WO 2005/060603 PCT/US2004/041069

T is a $-S(O)_{o}$; a carbonyl or a covalent bond;

o is an integer from 0 to 2;

 R_j and R_k are independently selected from an alkyl group, an aryl group, or R_j and R_k taken together with the nitrogen atom to which they are attached are a heterocylic ring:

 T_3 at each occurrence is independently a covalent bond, a carbonyl, an oxygen, $-S(O)_o$ - or $-N(R_a)R_i$;

h is an integer form 1 to 10;

q₁ is an integer from 1 to 5;

10

15

20

25

5

Re and Re are each independently a hydrogen, an alkyl, a cycloalkoxy, a halogen, a hydroxy, an hydroxyalkyl, an alkoxyalkyl, an arylheterocyclic ring, an alkylaryl, an alkylcycloalkyl, an alkylheterocyclic ring, a cycloalkylalkyl, a cycloalkylthio, an arylalklythio. an arylalklythioalkyl, an alkylthioalkyl a cycloalkenyl, an heterocyclicalkyl, an alkoxy, a haloalkoxy, an amino, an alkylamino, a dialkylamino, an arylamino, a diarylamino, an alkylarylamino, an alkoxyhaloalkyl, a sulfonic acid, a sulfonic ester, an alkylsulfonic acid, an arylsulfonic acid, an arylalkoxy, an alkylthio, an arylthio, a cyano an aminoalkyl, an aminoaryl, an aryl, an arylalkyl, an alkylaryl, a carboxamido, a alkylcarboxamido, an arylcarboxamido, an amidyl, a carboxyl, a carbamoyl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarbonyl, an arylcarbonyl, an ester, a carboxylic ester, an alkylcarboxylic ester, an arylcarboxylic ester, a sulfonamido, an alkylsulfonamido, an arylsulfonamido, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfonyl, arylsulphonyloxy, a sulfonic ester, an alkyl ester, an aryl ester, a urea, a phosphoryl, a nitro, -(U₃)_{bb}-V₃, -C(R_e)(R_f)_k-(U₃)_{bb}-V₃, or R_e and R_f taken together with the carbons to which they are attached form a carbonyl, a methanthial, a heterocyclic ring, a cycloalkyl group, an aryl group, an oxime, a hydrazone or a bridged cycloalkyl group;

k is an integer from 1 to 3;

R_a is a lone pair of electrons, a hydrogen or an alkyl group;

R_i is a hydrogen, an alkyl, an aryl, an alkylcarboxylic acid, an arylcarboxylic acid, an alkylcarboxylic ester, an arylcarboxylic ester, an alkylcarboxamido, an arylcarboxamido, an

alkylaryl, an alkylsulfinyl, an alkylsulfonyl, an alkylsulfonyloxy, an arylsulfinyl, an arylsulfonyl, arylsulphonyloxy, a sulfonamido, a carboxamido, a carboxylic ester, an aminoalkyl, an aminoaryl, ${}^{-}CH_2{}^{-}C^{-}((U_3)_{bb}{}^{-}V_3)(R_e)(R_f)$, a bond to an adjacent atom creating a double bond to that atom, ${}^{-}(N_2O_2{}^{-})^{-}M_1{}^{+}$, wherein $M_1{}^{+}$ is an organic or inorganic cation;

with the proviso that the pyruvate compound of Formula (I) must contain at least one nitric oxide releasing group linked to the pyruvate compound through an oxygen atom, a nitrogen atom or a sulfur atom.

- 2. A composition comprising the compound of claim 1 and a pharmaceutically acceptable carrier.
- 3. The compound of claim 1, wherein the nitric oxide releasing group is a nitro group, a nitroso group, a furoxan, a sydnonimine, an oxatriazole-5-one and/or an oxatriazole-5-imine.
- 4. The compound of claim 1, wherein the compound of Formula (I) is a compound of Formula (III);

wherein the compound of Formula (III) is:

wherein

 R_m - R_n taken together can be a hydrogen atom; or

 R_m is:

(i) a covalent bond;

(ii) $-C((R_e)(R_f))_{2-5-}$;

(iii) $-C((R_e)(R_f))_{2-5}-T^{-2}$;

(iv) $-C((R_e)(R_f))_{2-5}-T'-C(O)$ -;

(v) a heterocyclic ring; or

(vi) a heterocyclic ring-C(O)-;

R_n is:

a hydrogen or:

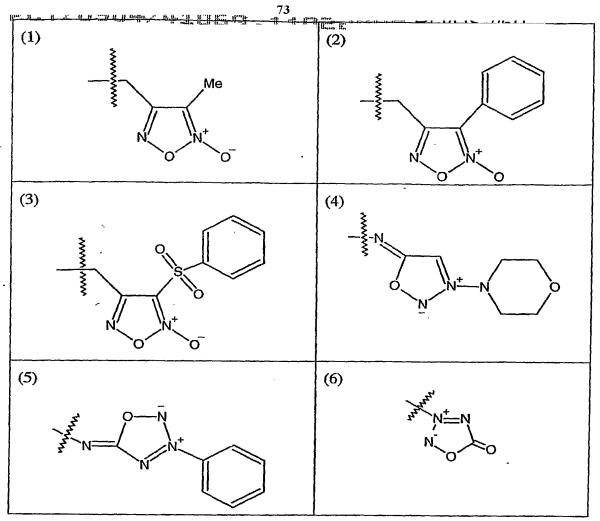
25

5

10

15

WO 2005/060603 PCT/US2004/041069



wherein:

T' is oxygen, sulfur or NR₆;

R₆ is a hydrogen, a lower alkyl group, an aryl group;

Re and Rf are as defined herein; and

with the proviso that the compounds of Formula (III) must contain at least one nitric oxide releasing group linked to the pyruvate compound through an oxygen atom, a nitrogen atom or a sulfur atom.

- 5. A method for treating a cardiovascular disease in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 2.
- 6. The method of claim 5, wherein the cardiovascular disease is congestive heart failure, restenosis, hypertension, diastolic dysfunction, a coronary artery disease, myocardial infarction, cerebral infarction, atherosclerosis, atherogenesis, cerebrovascular disease, angina, aneurysm, ischemic heart disease, cerebral ischemia, myocardial ischemia, thrombosis, platelet aggregation, platelet adhesion, smooth muscle cell proliferation, a vascular or non-

5

10 .

vascular complication associated with the use of a medical device, a wound associated with the use of a medical device, vascular or non-vascular wall damage, peripheral vascular disease, neointimal hyperplasia following percutaneous transluminal coronary angiograph, vascular grafting, coronary artery bypass surgery, a thromboembolic event, post-angioplasty restenosis, coronary plaque inflammation, hypercholesterolemia, embolism, stroke, shock, arrhythmia, atrial fibrillation or atrial flutter, or thrombotic occlusion and reclusion cerebrovascular incident.

5

10

15

20

25

30

- 7. The method of claim 6, wherein the cardiovascular disease is congestive heart failure, hypertension or diastolic dysfunction.
- 8. A method for treating a renovascular disease in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 2.
- 9. The method of claim 12, wherein the renovascular disease is renal failure or renal insufficiency.
- 10. A method for treating diabetes; treating a disease resulting from oxidative stress; treating an endothelial dysfunction; treating a disease caused by endothelial dysfunction; treating cirrhosis; treating pre-eclampsia; treating osteoporosis; treating nephropathy; reperfusing injury following ischemia and/or preserving a tissue, an organ an organ part and/or a limb in a patient in need thereof comprising administering to the patient a therapeutically effective amount of the composition of claim 2.
- 11. The composition of claim 2, further comprising (i) at least one therapeutic agent; (ii) at least one nitric oxide donor compound; or (iii) at least one therapeutic agent and at least one nitric oxide donor compound.
- 12. The composition of claim 11, wherein the therapeutic agent is an aldosterone antagonist, an alpha-adrenergic receptor antagonist, an angiotensin Π antagonist, an angiotensin-converting enzyme inhibitor, an antidiabetic compound, an anti-hyperlipidemic compound, an antioxidant, an antithrombotic and vasodilator compound, a β -adrenergic antagonist, a calcium channel blocker, a digitalis, a diuretic, an endothelin antagonist, a hydralazine compound, a H_2 receptor antagonist, a neutral endopeptidase inhibitor, a nonsteroidal antiinflammatory compound, a phosphodiesterase inhibitor, a potassium channel blocker, a platelet reducing agent, a proton pump inhibitor, a renin inhibitor, a selective cyclooxygenase-2 inhibitor, or a combination of two or more thereof.
- 13. The composition of claim 12, wherein the therapeutic agent is at least one compound selected from the group consisting of an aldosterone antagonist, an angiotensin Π antagonist, an angiotensin-converting enzyme inhibitor, a β -adrenergic antagonist, a diuretic

and a hydralazine compound.

5

10

15 \

20

25

30

- 14. The composition of claim 13, wherein the aldosterone antagonist is eplerenone or spironolactone; the angiotensin II antagonist is candesartan cilexetil, eprosartan mesylate, irbesartan, losartan potassium, medoxomil, telmisartan, trandolapril, trandolaprilat or valsartan; the angiotensin-converting enzyme inhibitor is benazepril hydrochloride, captopril, enalapril maleate, fosinopril sodium, lisinopril, moexipril hydrochloride, quinapril hydrochloride; the β -adrenergic antagonist is bisoprolol fumarate, carvedilol, metoprolol tartrate, propranolol hydrochloride or timolol maleate; the diuretic is amiloride hydrochloride, chlorthalidone, hydrochlorothiazide or triamterene; and the hydralazine compound is hydralazine hydrochloride.
- 15. The composition of claim 11, wherein the nitric oxide donor compound is selected from the group consisting of a S-nitrosothiol, a nitrite, a nitrate, a S-nitrothiol, a sydnonimine, a NONOate, a N-nitrosoamine, a N-hydroxyl nitrosamine, a nitrosimine, a diazetine dioxide, an oxatriazole 5-imine, an oxatriazole-5-one, an oxime, a hydroxylamine, a N-hydroxyguanidine, a hydroxyurea and/or a furoxan.
- 16. The method of claim 5, 8 or 10, further comprising administering (i) at least one therapeutic agent; (ii) at least one nitric oxide donor compound; or (iii) at least one therapeutic agent and at least one nitric oxide donor compound.
- 17. The method of claim 16, wherein the therapeutic agent is an aldosterone antagonist, an alpha-adrenergic receptor antagonist, an angiotensin II antagonist, an angiotensin-converting enzyme inhibitor, an antidiabetic compound, an anti-hyperlipidemic compound, an antioxidant, an antithrombotic and vasodilator compound, a β-adrenergic antagonist, a calcium channel blocker, a digitalis, a diuretic, an endothelin antagonist, a hydralazine compound, a H₂ receptor antagonist, a neutral endopeptidase inhibitor, a nonsteroidal antiinflammatory compound, a phosphodiesterase inhibitor, a potassium channel blocker, a platelet reducing agent, a proton pump inhibitor, a renin inhibitor, a selective cyclooxygenase-2 inhibitor, or a combination of two or more thereof.
- 18. The method of claim 17, wherein the nitric oxide donor compound is selected from the group consisting of a S-nitrosothiol, a nitrite, a nitrate, a S-nitrothiol, a sydnonimine, a NONOate, a N-nitrosoamine, a N-hydroxyl nitrosamine, a nitrosimine, a diazetine dioxide, an oxatriazole 5-imine, an oxatriazole-5-one, an oxime, a hydroxylamine, a N-hydroxyguanidine, a hydroxyurea and/or a furoxan.
 - 19. A kit comprising at least one compound of claim 1.
- 20. A compound selected from the group consisting of: 1-[4-(nitrooxy)piperidyl]propane-1,2-dione;

```
N-[3-(nitrooxy)propyl]-2-oxopropanamide;
N-[2,2-dimethyl-3-(nitrooxy)propyl]-2-oxopropanamide;
```

N-[(1S)-2-(nitrooxy)-1-phenylethyl]-2-oxopropanamide;

N-[(1S)-2-(Nitrooxy)-1-benzylethyl]-2-oxopropanamide;

N-[(5-hydroxy-4-methyl(1,2,5-oxadiazol-3-yl))methyl]-N-methyl-2-oxopropanamide; (4R)-2-methyl-5-(nitrooxy)-N-(2-oxo(3-3,4,5-trihydrothienyl))-4-phenyl-3-azapent-2-enamide;

{3-[(nitrooxy)methyl]phenyl}methyl 2-oxopropanoate;

(4-(nitrooxy)piperidyl)methyl-2-oxopropanoate;

10 2-(4-(nitrooxy)piperidyl)ethyl-2-oxopropanoate;

3-(4-(nitrooxy)piperidyl)propyl-2-oxopropanoate;

1-(4-(nitrooxy)piperidyl)propane-1,2-dione;

(2R)-2,3-bis(nitrooxy)propyl-2-oxopropanoate;

(4-(2-(nitrooxy)ethyl)phenyl)methyl-2-oxopropanoate;

15 (4-((nitrooxy)methyl)piperzinyl)methyl-2-oxopropanoate;

2-(4-((nitrooxy)methyl)piperzinyl)ethyl-2-oxopropanoate;

3-(4-((nitrooxy)methyl)piperzinyl)propyl-2-oxopropanoate;

(4-(2-(nitrooxy)ethyl)piperzinyl)methyl-2-oxopropanoate;

2-(4-(2-(nitrooxy)ethyl)piperzinyl)ethyl-2-oxopropanoate;

20 3-(4-(2-(nitrooxy)ethyl)piperzinyl)propyl-2-oxopropanoate;

(4-(3-(nitrooxy)propyl)piperzinyl)methyl-2-oxopropanoate;

2-(4-(3-(nitrooxy)propyl)piperzinyl)ethyl-2-oxopropanoate; 3-(4-(3-(nitrooxy)propyl)piperzinyl)propyl-2-oxopropanoate;

1-(2-((nitrooxy)methyl)piperidyl)propane-1,2-dione;

25 1-(3-((nitrooxy)methyl)piperidyl)propane-1,2-dione;

1-(4-((nitrooxy)methyl)piperidyl)propane-1,2-dione;

methyl (2R)-2-amino-3-((3-((2-(2-(nitrooxy)ethoxy)ethyl)amino)-2,3-dioxopropyl)thio) propanoate;

4-(N-((1R)-1-(methoxycarbonyl)-2-(2-(N-(2-(2-(nitrooxy)ethoxy)ethyl)carbamoyl)-2-

30 oxoethylthio)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;

2-(4-(2-(nitrooxy)ethoxy)phenoxy)ethyl 3-((2R)-2-amino-2-(methoxycarbonyl)ethylthio)-2-oxopropanoate;

4-(N-((1R)-1-(methoxycarbonyl)-2-(2-((2-(4-(2-

(nitrooxy)ethoxy)phenoxy)ethyl)oxycarbonyl)-2-oxoethylthio)ethyl)carbamoyl)(2S)-2-

aminobutanoic acid;

methyl (2R)-2-amino-3-((3-((1-((nitrooxy)methyl)benzyl)oxy)-2,3-dioxopropyl)thio) propanoate;

- 4-(N-((1R)-1-(methoxycarbonyl)-2-(2-(((3-((nitrooxy)methyl)phenyl)methyl)oxycarbonyl)-2-oxoethylthio)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;
- 5 methyl (2R)-2-amino-3-((3-((4-((nitrooxy)methyl)benzyl)oxy)-2,3-dioxopropyl)thio) propanoate;
 - 4-(N-((1R)-1-(methoxycarbonyl)-2-(2-(((4-((nitrooxy)methyl)phenyl)methyl)oxycarbonyl)-2-oxoethylthio)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;
 - methyl (2R)-2-amino-3-((3-((3-(nitrooxy)propyl)amino)-2,3-dioxopropyl)thio)propanoate;
- 3-(nitrooxy)propyl 2-oxopropanoate;
 - 3-(pyruvoylamino)propyl nitrate;
 - 2,2-dimethyl-3-(nitrooxy)propyl 2-oxopropanoate;
 - 2,2-dimethyl-3-(pyruvoylamino)propyl nitrate;
 - 3-(nitrooxy)-2-[(nitrooxy)methyl]propyl 2-oxopropanoate;
- 2-(nitrooxy)-1-[(nitrooxy)methyl]ethyl 2-oxopropanoate;
 - 2-(pyruvoylamino)propane-1,3-diyl dinitrate;
 - 3,5-bis[(nitrooxy)methyl]benzyl 2-oxopropanoate;
 - 2-methyl-3-(nitrooxy)-2-[(nitrooxy)methyl]propyl 2-oxopropanoate;
 - 3-(nitrooxy)-2,2-bis[(nitrooxy)methyl]propyl 2-oxopropanoate;
- 20 2-{4-[2-(nitrooxy)ethoxy]phenoxy}ethyl 2-oxopropanoate;
 - 2-nitro-3-(nitrooxy)-2-[(nitrooxy)methyl]propyl 2-oxopropanoate;
 - 2-[2-(pyruvoylamino)ethoxy]ethyl nitrate;
 - 3-[(nitrooxy)methyl]benzyl 2-oxopropanoate;
 - 4-[(nitrooxy)methyl]benzyl 2-oxopropanoate;
- 25 (2S)-2-amino-5-[3-(nitrooxy)-2-[(nitrooxy)methyl]-2-(pyruvoylamino)propoxy]-5-oxopentanoic acid;
 - (2S)-2-amino-5-({2-(nitrooxy)-1-[(nitrooxy)methyl]-1-[(pyruvoyloxy)methyl]ethyl}amino)-5-oxopentanoic acid;
 - (2S)-2-amino-5-{3-(nitrooxy)-2-[(pyruvoyloxy)methyl]propoxy}-5-oxopentanoic acid;
- 30 (2S)-2-amino-5-{2-methyl-3-(nitrooxy)-2-[(pyruvoyloxy)methyl]propoxy}-5-oxopentanoic acid;
 - (2S)-2-amino-5-{3-(nitrooxy)-2-[(nitrooxy)methyl]-2-[(pyruvoyloxy)methyl]propoxy}-5-oxopentanoic acid;
 - (2S)-2-amino-5-{2-nitro-3-(nitrooxy)-2-[(pyruvoyloxy)methyl]propoxy}-5-oxopentanoic
- 35 acid;

- (2S)-2-amino-5-[3-(nitrooxy)-2-(pyruvoylamino)propoxy]-5-oxopentanoic acid;
- (2S)-2-amino-5-({3-[(nitrooxy)methyl]-5-[(pyruvoyloxy)methyl]benzyl}oxy)-5-oxopentanoic acid;
- (2S)-2-amino-5-[3-(nitrooxy)-2-(pyruvoyloxy)propoxy]-5-oxopentanoic acid;
- 5 (2S)-2-amino-5-{2-(nitrooxy)-1-[(pyruvoyloxy)methyl]ethoxy}-5-oxopentanoic acid; (2S)-2-amino-5-({2-(nitrooxy)-1-[(pyruvoyloxy)methyl]ethyl}amino)-5-oxopentanoic acid;
 - 4-(N-((1R)-1-(methoxycarbonyl)-2-(2-(N-(3-(nitrooxy)propyl)carbamoyl)-2-
 - oxoethylthio)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;
 - methyl (2R)-2-amino-3-((3-((2,2-dimethyl-3-(nitrooxy)propyl)amino)-2,3-dioxopropyl)thio)
- 10 propanoate;
 - 4-(N-((1R)-2-(2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)carbamoyl)-2-oxoethylthio)-1-((1R)-2-(2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)carbamoyl)-2-oxoethylthio)-1-((1R)-2-(2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)carbamoyl)-2-oxoethylthio)-1-((1R)-2-(2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)carbamoyl)-2-oxoethylthio)-1-((1R)-2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)carbamoyl)-2-oxoethylthio)-1-((1R)-2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)carbamoyl)-2-oxoethylthio)-1-((1R)-2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)carbamoyl)-2-oxoethylthio)-1-((1R)-2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)carbamoyl)-2-oxoethylthio)-1-((1R)-2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)carbamoyl)-2-oxoethylthio)-1-((1R)-2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)-2-((1R)-2-(N-(2,2-dimethyl-3-(nitrooxy)propyl)-2-((N-(2,2-dimethyl-3-(nitrooxy)propyl
 - (methoxycarbonyl)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;
 - methyl (2R)-2-amino-3-((3-((2-(nitrooxy)-1-((nitrooxy)methyl)ethyl)amino)-2,3-dioxopropyl)
- thio)propanoate;
- 15 4-(N-((1R)-1-(methoxycarbonyl)-2-(2-(N-(2-(nitrooxy)-1-
 - ((nitrooxy)methyl)ethyl)carbamoyl)-2-oxoethylthio)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;
 - methyl (2R)-2-amino-3-((3-(3-(nitrooxy)-2,2-bis((nitrooxy)methyl)propoxy)-2,3-dioxopropyl) thio)propanoate;
- 20 4-(N-((1R)-2-(2-((2,2-bis((nitrooxy)methyl)-3-(nitrooxy)propyl)oxycarbonyl)-2
 - oxoethylthio)-1-(methoxycarbonyl)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;
 - methyl (2R)-2-amino-3-((3-(2-methyl-3-(nitrooxy)-2-((nitrooxy)methyl)propoxy)-2,3-
 - dioxopropyl) thio)propanoate;
 - 4-(N-((1R)-1-(methoxycarbonyl)-2-(2-((2-methyl-3-(nitrooxy)-2-((nitrooxy)methyl)propyl)
- 25 oxycarbonyl)-2-oxoethylthio)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;
 - methyl (2R)-2-amino-3-((3-(2-nitro-3-(nitrooxy)-2-((nitrooxy)methyl)propoxy)-2,3-
 - dioxopropyl)thio)propanoate;
 - 4-(N-((1R)-1-(methoxycarbonyl)-2-(2-((2-nitro-3-(nitrooxy)-2-((nitrooxy)methyl)propyl)
 - oxycarbonyl)-2-oxoethylthio)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;
- methyl (2R)-2-amino-3-((3-(3-(nitrooxy)propoxy)-2,3-dioxopropyl)thio)propanoate;
 - 4-(N-((1R)-1-(methoxycarbonyl)-2-(2-((3-(nitrooxy)propyl)oxycarbonyl)-2-oxoethylthio)
 - ethyl)carbamovl)(2S)-2-aminobutanoic acid;
 - methyl (2R)-2-amino-3-((3-(2,2-dimethyl-3-(nitrooxy)propoxy)-2,3-dioxopropyl)thio)
 - propanoate;

- 4-(N-((1R)-2-(2-((2,2-dimethyl-3-(nitrooxy)propyl)oxycarbonyl)-2-oxoethylthio)-1-(methoxycarbonyl)ethyl)carbamoyl)(2S)-2-aminobutanoic acid; methyl (2R)-2-amino-3-((3-(3-(nitrooxy)-2-((nitrooxy)methyl)propoxy)-2,3-dioxopropyl) thio)propanoate;
- 4-(N-((1R)-1-(methoxycarbonyl)-2-(2-((3-(nitrooxy)-2-((nitrooxy)methyl)propyl)oxycarbonyl)-2-oxoethylthio)ethyl)carbamoyl)(2S)-2aminobutanoic acid; methyl (2R)-2-amino-3-((3-(2-(nitrooxy)-1-((nitrooxy)methyl)ethoxy)-2,3-dioxopropyl)thio) propanoate;
- 4-(N-((1R)-1-(methoxycarbonyl)-2-(2-((2-(nitrooxy)-1-((nitrooxy)methyl)ethyl)oxycarbonyl)-2-oxoethylthio)ethyl)carbamoyl)(2S)-2-aminobutanoic acid; methyl (2R)-2-amino-3-((3-((3,5-bis((nitrooxy)methyl)benzyl)oxy)-2,3-dioxopropyl)thio) propanoate;
- 4-(N-((1R)-2-(2-(((3,5-bis((nitrooxy)methyl)phenyl)methyl)oxycarbonyl)-2-oxoethylthio)-1(methoxycarbonyl)ethyl)carbamoyl)(2S)-2-aminobutanoic acid;
 methyl (2R)-2-(acetylamino)-3-((3-((2-(2-(nitrooxy)ethoxy)ethyl)amino)-2,3dioxopropyl)thio) propanoate;
 - methyl (2R)-2-(acetylamino)-3-((3-((3-(nitrooxy)propyl)amino)-2,3-dioxopropyl)thio) propanoate;
- 2-(4-(2-(nitrooxy)ethoxy)phenoxy)ethyl 3-((2R)-2-(acetylamino)-2-(methoxycarbonyl) ethylthio)-2-oxopropanoate; methyl (2R)-2-(acetylamino)-3-((3-((2,2-dimethyl-3-(nitrooxy)propyl)amino)-2,3-dioxopropyl)thio)propanoate;
- methyl (2R)-2-(acetylamino)-3-((3-((1-((nitrooxy)methyl)benzyl)oxy)-2,3-dioxopropyl)thio) propanoate;
 - methyl (2R)-2-(acetylamino)-3-((3-((2-(nitrooxy)-1-((nitrooxy)methyl)ethyl)amino)-2,3-dioxopropyl)thio)propanoate;
 - methyl (2R)-2-(acetylamino)-3-((3-((4-((nitrooxy)methyl)benzyl)oxy)-2,3-dioxopropyl)thio) propanoate;
- 2,2-bis((nitrooxy)methyl)-3-(nitrooxy)propyl 3-((2R)-2-(acetylamino)-2-(methoxycarbonyl) ethylthio)-2-oxopropanoate;
 - 2-methyl-3-(nitrooxy)-2-((nitrooxy)methyl)propyl 3-((2R)-2-(acetylamino)-2-(methoxycarbonyl) ethylthio)-2-oxopropanoate;
 - methyl (2R)-2-(acetylamino)-3-((3-(a-(nitrooxy)-2-((nitrooxy)methyl)propoxy)-2,3-
- dioxopropyl) thio)propanoate;

- methyl (2R)-2-(acetylamino)-3-((3-(2-nitro-3-(nitrooxy)-2-((nitrooxy)methyl)propoxy)-2,3-dioxopropyl)thio)propanoate;
- methyl (2R)-2-(acetylamino)-3-((3-(2-(nitrooxy)-1-((nitrooxy)methyl)ethoxy)-2,3-dioxopropyl) thio)propanoate;
- methyl (2R)-2-(acetylamino)-3-((3-(3-(nitrooxy)propoxy)-2,3-dioxopropyl)thio)propanoate; (3,5-bis((nitrooxy)methyl)phenyl)methyl 3-((2R)-2-(acetylamino)-2-(methoxycarbonyl) ethylthio)-2-oxopropanoate; methyl (2R)-2-(acetylamino)-3-((3-(2,2-dimethyl-3-(nitrooxy)propoxy)-2,3-dioxopropyl)
 - methyl (2R)-2-(acetylamino)-3-((3-(2,2-dimethyl-3-(nitrooxy)propoxy)-2,3-dioxopropyl) thio)propanoate;
- 4-((2-(((2R)-2,3-bis(nitrooxy)propyl)oxycarbonyl)(2S)-2-(2-oxopropanoylamino)ethyl) oxycarbonyl)(2S)-2-aminobutanoic acid;
 - (2S)-4-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-2-(2-oxopropanoylamino)ethyl) oxycarbonyl)-2-aminobutanoic acid;
 - 4-(N-(4-(((2R)-2,3-bis(nitrooxy)propyl)oxycarbonyl)(4S)-4-(2-oxopropanoylamino)butyl)
- carbamoyl)(2S)-2-aminobutanoic acid;
 - (2S)-4-(N-((4S)-4-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-4-(2-
 - oxopropanoylamino)butyl) carbamoyl)-2-aminobutanoic acid;
 - 4-(N-(5-(((2R)-2,3-bis(nitrooxy)propyl)oxycarbonyl)(5S)-5-(2-oxopropanoylamino) pentyl)carbamoyl)(2S)-2-aminobutanoic acid;
- 20 (2S)-4-(N-((5S)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2
 - oxopropanoylamino)pentyl) carbamoyl)-2-aminobutanoic acid;
 - 5-((2R)-2-(((2R)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-2-(2-
 - oxopropanoylamino)ethylthio)(2S)-2-amino-5-oxopentanoic acid;
 - 5-((2R)-2-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-2-(2-
- 25 oxopropanoylamino)ethylthio)(2S)-2-amino-5-oxopentanoic acid;
 - 4-(N-(5-(N-((2R)-2,3-bis(nitrooxy)propyl)carbamoyl)(5S)-5-(2-oxopropanoylamino)pentyl) carbamoyl)(2S)-2-aminobutanoic acid;
 - (2S)-4-(N-((5S)-5-(N-((2S)-2,3-bis(nitrooxy)propyl)carbamoyl)-5-(2-1)
 - oxopropanoylamino)pentyl) carbamoyl)-2-aminobutanoic acid;
- 30 (2S)-4-(N-((5S)-5-((2,2-bis((nitrooxy)methyl)-3-(nitrooxy)propyl)oxycarbonyl)-5-(2
 - oxopropanoylamino)pentyl)carbamoyl)-2-aminobutanoic acid;
 - (2S)-4-(N-((5S)-5-(((6S, 2R)-6-(nitrooxy)-4,8-dioxabicyclo(3.3.0)oct-2-yl)oxycarbonyl)-5-(2-
 - oxopropanoylamino)pentyl)carbamoyl)-2-aminobutanoic acid;
 - (2S)-4-(N-((5S)-5-(((2S, 6R)-6-(nitrooxy)-4,8-dioxabicyclo(3.3.0)oct-2-yl)oxycarbonyl)-5-(2-
- 35 oxopropanoylamino)pentyl)carbamoyl)-2-aminobutanoic acid;

- 4-(((1E)-2-(N-((2R)-2,3-bis(nitrooxy)propyl)carbamoyl)-1-azaprop-1-enyl)oxycarbonyl)(2S)-2-aminobutanoic acid;
- 4-(((1E)-2-(N-((2S)-2,3-bis(nitrooxy)propyl)carbamoyl)-1-azaprop-1-enyl)oxycarbonyl)(2S)-2-aminobutanoic acid;
- 5 4-(N-((1E)-2-(N-((2R)-2,3-bis(nitrooxy)propyl)carbamoyl)-1-azaprop-1-enyl)carbamoyl)(2S)-2-aminobutanoic acid;
 - 4-(N-((1E)-2-(N-((2S)-2,3-bis(nitrooxy)propyl)carbamoyl)-1-azaprop-1-enyl)carbamoyl)(2S)-2-aminobutanoic acid;
 - 4-(N-(1-(((2R)-2,3-bis(nitrooxy)propyl)oxycarbonyl)(1S)-5-(2-oxopropanoylamino)pentyl)
- 10 carbamoyl)(2S)-2-aminobutanoic acid;
 - (2S)-4-(N-((1S)-1-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(2-1)-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-5-(((2S)-2,3-bis(nitrooxy)propyl)-5-(((2S)-2,3-bis(n
 - oxopropanoylamino)pentyl) carbamoyl)-2-aminobutanoic acid;
 - 4-(N-(1-(N-((2R)-2,3-bis(nitrooxy)propyl)carbamoyl)(1S)-5-(2-oxopropanoylamino)pentyl) carbamoyl)(2S)-2-aminobutanoic acid;
- (2S)-4-(N-((1S)-1-(N-((2S)-2,3-bis(nitrooxy)propyl)carbamoyl)-5-(2-oxopropanoylamino)pentyl) carbamoyl)-2-aminobutanoic acid;
 4-(N-(1-(((2R)-2,3-bis(nitrooxy)propyl)oxycarbonyl)(1S)-2-(2-oxopropanoyloxy)ethyl) carbamoyl)(2S)-2-aminobutanoic acid;
 - (2S)-4-(N-((1S)-1-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-2-(2-oxopropanoyloxy)ethyl)
- 20 carbamoyl)-2-aminobutanoic acid;
 - 4-(N-(1-(((2R)-2,3-bis(nitrooxy)propyl)oxycarbonyl)(1S)-4-(2-oxopropanoylamino) butyl)carbamoyl)(2S)-2-aminobutanoic acid;
 - (2S)-4-(N-((1S)-1-(((2S)-2,3-bis(nitrooxy)propyl)oxycarbonyl)-4-(2-oxopropanoylamino) butyl)carbamoyl)-2-aminobutanoic acid; or a pharmaceutically acceptable salt thereof.